

ESA feedback to SPP on ELCC Standalone Battery Study Scope

6/1/2021

ESA submits feedback on the SPP SAWG's ELCC Standalone Battery Study Scope regarding recommendations for improvements to the current study scope, questions on aspects of the scope that are unclear, and recommendations for the inclusion of additional study elements. ESA's recommendations and questions appear in the sub-bullets below.

Recommendations:

- **Solar and Wind Penetration Levels:**
 - The amount of solar and wind on SPP's system will likely impact the ELCC value that storage can provide.¹ Currently, the Study Scope does not take solar or wind penetration levels into account. ESA recommends that at least two scenarios (i.e., low and high) of solar and wind capacity additions be considered in the scenarios since the economic value of storage rises as renewable generation provides an increasing share of electricity supply.
- **Storage durations over 8 hours:**
 - The durations in the Study Scenarios (Table 1, pgs. 5-6) of the Study Scope do not currently include storage durations greater than 8-hours. This does not send the appropriate market signal for those storage technologies that can operate at longer durations at lower costs. Recognizing that the SAWG previously determined to study storage only up to 8-hr duration, ESA recommends that SPP model 10-hours of storage, similar to PJM, and specify the durations that can secure a 100% ELCC rating. Doing so would enable longer duration resources to be fully valued and enable a more effective assessment of all the energy storage resources that are required on the system. This addition would make the study methodology more durable over time, avoiding the need for this change to be made in the future.
- **Future Tiers:**
 - In the Tier Determination section of the Study Scope (pg. 7) it says: "All future tiers will be modeled with the nameplate capacity shown above in Table 1 ranging from 1,000MW to 5,000MW." ESA recommends that the future tiers of battery storage be modeled up to 8,000 MW (rather than up to 5,000 MW). In the [Energy Storage Accreditation White Paper](#), the upper threshold of 8,000 MW was proposed in order to see the impacts of a large volume of energy storage on the system, and to determine

¹ Paul Denholm, et al., *The Potential for Battery Energy Storage to Provide Peaking Capacity in the United States*, (NREL, 2019), PDF pages 35 and 44.

future potential capacity values at different future penetrations of energy storage. For this reason, ESA recommends that future tiers be modeled up to 8,000 MW.

Questions

- **ESR with Six Hour, Eight Hour, or Greater Rating (text on Scope doc in Section C, p. 9)**
 - On 5/27, SAWG staff let ESA know that text on p. 9 of Scope doc in Section C (shown below in italics) for durations over 4 hours is incorrect:

[Scope Study Version] Batteries greater than four hours will be treated as four-hour batteries in the study. If the SAWG determines that the minimum duration of ESR should be increased beyond a four-hour minimum, this policy will be re-visited

- On 5/27, SAWG staff shared that correct text that should appear on p. 9 of Scope doc in Section C (shown below in italics) is:

[5/27 Corrected Version] Batteries greater than four hours will be prioritized before four-hour batteries. When studying the next duration category, it will build upon the previous.

- Does the text shared on 5/27 mean that in effect, there is no incremental load carrying capability benefit to storage resources with durations longer than 4 hours? If so, why would SPP not treat an 8-hour battery, for example, as an 8-hour battery?
- **4-hr Min Duration:**
 - Can SAWG clarify what it means in the text on page 9 stating “if the SAWG determines that the minimum duration of ESR should be increased beyond a four-hour minimum, this policy will be revisited?” Does this mean that only 2-hour storage would be ineligible for modeling or would other durations also be excluded from modeling and capacity value accreditation? Or does this mean that 4-hour is the lowest value that SPP will study and a 2-hour battery would receive 50% capacity (and if SPP were to use 6-hour duration as the minimum, then a 2-hour battery would get 33% capacity)?

Additional Considerations

- **Future Indicative Capacity Values:**
 - Project developers find it very valuable to have an indication of future capacity values. Currently, the Study Scope does not include future values. ESA recommends adding an annual non-binding indicative outlook of SPP’s projections of capacity values for a future window (e.g. the next 5 or 10 years) to provide project developers with a sense of what future capacity values may be.
 - For these future capacity values, SPP should calculate and publish the energy storage duration that would receive a 100% ELCC value over the future time period. Doing so would provide an important market signal about what types of energy storage resources will be required on the grid, informing industry project development decisions.

- **Transmission Constraints:**
 - The Study Scope does not currently include consideration of transmission constraints in the modeling. ESA recommends inclusion of transmission constraints in the modeling to take into account actual operating conditions and to more accurately reflect and inform the capacity values of different durations of energy storage.